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1 **CLAIMS**

2

3 1. A method of automatic gain control, comprising:

4 detecting a signal envelope voltage responsive to a receiver output;

5 detecting a clock envelope voltage responsive to a clock signal; and

6 adjusting a gain to reduce a difference between the signal envelope voltage

7 and the clock envelope voltage.

8

9 2. A method as recited in claim 1, wherein the adjusting comprises:

10 determining the difference between the signal envelope voltage and

11 the clock envelope voltage; and

12 providing the difference to a gain control input of an amplifier.

13

14 3. A method as recited in claim 1, further comprising:

15 receiving an input signal;

16 amplifying the input signal in accordance with the gain; and

17 providing the amplified input signal as the receiver output.

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19 4. A method as recited in claim 1, wherein the clock signal comprises a

20 differential voltage clock signal, and the gain is related to an amplifier circuit.

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1 5. A method as recited in claim 4, wherein the adjusting comprises:
2 establishing the gain of the amplifier circuit so that a peak voltage or
3 swing of the receiver output is approximately equal to a peak voltage or
4 swing of the differential voltage clock signal.

5
6 6. A method as recited in claim 1, wherein the adjusting comprises:
7 feeding the difference between the signal envelope voltage and the
8 clock envelope voltage back to a differential amplifier circuit.

9
10 7. A method as recited in claim 1, wherein the action of detecting a
11 signal envelope voltage comprises detecting a first signal envelope voltage
12 responsive to a first receiver output;
13 further comprising:
14 detecting a second signal envelope voltage responsive to a second receiver
15 output; and
16 adjusting another gain to reduce a difference between the first signal
17 envelope voltage and the second signal envelope voltage.

18
19 8. A method as recited in claim 7, wherein the gain and the other gain
20 comprise gains of a first stage and a second stage, respectively, of a two-stage
21 amplifier; and wherein the first receiver output comprises a positive output of the
22 two-stage amplifier, and the second receiver output comprises a negative output of
23 the two-stage amplifier.
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1 **9.** A method of automatic gain control, comprising:
2 detecting one or more signal envelope voltages responsive to multiple
3 receiver outputs;
4 detecting a clock envelope voltage responsive to a clock signal; and
5 adjusting multiple gains to reduce at least one difference between the one or
6 more signal envelope voltages and the clock envelope voltage.

7
8 **10.** A method as recited in claim 9, wherein the detecting one or more
9 signal envelope voltages comprises at least one of:

10 tracking the one or more signal envelope voltages using multiple
11 respective capacitances for the multiple receiver outputs; or

12 tracking the one or more signal envelope voltages using a shared
13 capacitance for the multiple receiver outputs.

14
15 **11.** A method as recited in claim 9, wherein the detecting one or more
16 signal envelope voltages comprises at least one of:

17 tracking extreme voltage peaks from among the multiple receiver
18 outputs; or

19 tracking an average of voltage peaks of the multiple receiver outputs.
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1 **12.** A method as recited in claim 9, wherein the detecting one or more
2 signal envelope voltages comprises at least one of:

3 tracking positive envelope voltages of the multiple receiver outputs;

4 or

5 tracking negative envelope voltages of the multiple receiver outputs.
6

7 **13.** A method as recited in claim 9, wherein the adjusting comprises:

8 determining the at least one difference between the one or more
9 signal envelope voltages and the clock envelope voltage; and

10 applying the at least one difference to gain control inputs of multiple
11 receivers.
12

13 **14.** A method as recited in claim 9, wherein the action of detecting one
14 or more signal envelope voltages comprises detecting one or more first signal
15 envelope voltages responsive to multiple first receiver outputs;

16 further comprising:

17 detecting one or more second signal envelope voltages responsive to
18 multiple second receiver outputs; and

19 adjusting other multiple gains to reduce at least one difference between the
20 one or more first signal envelope voltages and the one or more second signal
21 envelope voltages.
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1 **15.** A method of automatic gain control, comprising:
2 collectively monitoring a group envelope voltage of a group of receiver
3 outputs;
4 detecting a clock envelope voltage of a clock signal; and
5 collectively adjusting receiver gains to reduce a difference between the
6 group envelope voltage and the clock envelope voltage.

7
8 **16.** A method as recited in claim 15, wherein the collectively adjusting
9 comprises:
10 collectively adjusting the receiver gains of multiple amplifiers to
11 cause the group envelope voltage to approximately equal the clock
12 envelope voltage.

13
14 **17.** A method as recited in claim 15, wherein the collectively
15 monitoring comprises at least one of:
16 detecting the group envelope voltage of the group of receiver outputs
17 using multiple individual envelope detectors; or
18 detecting the group envelope voltage of the group of receiver outputs
19 using a single group envelope detector.

1 **18.** A method as recited in claim 15, wherein the collectively adjusting
2 comprises:

3 collectively adjusting the receiver gains of multiple amplifiers to
4 reduce the difference between the group envelope voltage and the clock
5 envelope voltage using a feedback loop.
6

7 **19.** A method as recited in claim 18, wherein the detecting comprises:

8 detecting the clock envelope voltage of the clock signal, the clock
9 signal comprising a differential voltage clock signal that is associated with
10 signal inputs of the multiple amplifiers.
11

12 **20.** A method as recited in claim 15, further comprising:

13 receiving a group of data signals;

14 amplifying the group of data signals in accordance with the receiver gains;

15 and

16 providing the amplified group of data signals as the group of receiver
17 outputs.
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19 **21.** A method as recited in claim 15, wherein the group of receiver
20 outputs comprises eight receiver outputs.
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1 **22.** A method of automatic gain control, comprising:
2 receiving a group of input data signals;
3 amplifying the group of input data signals in accordance with adjustable
4 gains to produce a group of output data signals;
5 detecting a group envelope voltage of the group of output data signals;
6 detecting a clock envelope voltage of a clock signal; and
7 collectively adjusting the adjustable gains responsive to the group envelope
8 voltage and the clock envelope voltage.

9
10 **23.** A method as recited in claim 22, wherein the collectively adjusting
11 comprises:
12 collectively adjusting the adjustable gains to reduce a difference
13 between the group envelope voltage and the clock envelope voltage.

14
15 **24.** A method as recited in claim 23, wherein the collectively adjusting
16 further comprises:
17 determining the difference between the group envelope voltage and
18 the clock envelope voltage; and
19 applying the difference to gain control inputs of a group of receivers.

20
21 **25.** A method as recited in claim 24, wherein the determining
22 comprises:
23 determining the difference between the group envelope
24 voltage and the clock envelope voltage with a feedback component.

1 **26.** A method as recited in claim 25, wherein the feedback component
2 comprises a g_m stage.

3
4 **27.** A method as recited in claim 22, wherein the receiving and the
5 amplifying are performed by a group of amplifying receivers.

6
7 **28.** A method as recited in claim 27, wherein the group of amplifying
8 receivers comprises a group of differential amplifiers.

9
10 **29.** A method as recited in claim 22, wherein the detecting a group
11 envelope voltage is performed by at least one envelope detector, and the detecting
12 a clock envelope voltage is performed by a clock envelope detector.

13
14 **30.** A method as recited in claim 22, wherein the clock signal is
15 associated with the group of input data signals.